

Cruz Castillo

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CONTACT INFORMATION	Department of Mathematics 273 Altgeld Hall, 1409 W. Green Street,	University of Illinois Urbana-Champaign Urbana, IL 61801
EDUCATION	University of Illinois at Urbana-Champaign Ph.D. in Mathematics Advisor: Scott Ahlgren M.S. in Mathematics B.S. in Mathematics with Highest Distinction	August 2021- December 2021 May 2020
PUBLICATIONS	Non-vanishing for quartic Hecke L-functions and ranks of elliptic curves. 65pp. With Alexandre de Faveri and Alex Dunn Arithmetic properties of generalized Frobenius partitions. 16pp. With Scott Ahlgren Eisenstein series modulo prime powers. 12pp. Accepted for publication at Proc. of the AMS(2025) With Scott Ahlgren and Clayton Williams Surfaces associated to zeros of automorphic L-functions. 48pp. With Debmalya Basak and Alexandru Zaharescu. Sign changes of the error term of the Piltz divisor problem 29pp. Int. Math. Res. Not. IMRN 2024, no.20,13191-13220. With Siegfred Baluyot	Submitted(2026) Submitted(2025) Submitted(2024)
SCHOLARSHIPS, FELLOWSHIPS, AND AWARDS	NSF Graduate Research Fellowship Sloan Scholar Alfred P. Sloan Foundation's Minority Ph.D. Program Graduate College Master's Fellowship University of Illinois at Urbana-Champaign Math Alliance Scholar National Alliance for Doctoral Studies in the Mathematical Sciences President's Award Program Honors University of Illinois at Urbana-Champaign	2022- 2021- 2020-2021 2019- 2017-2020
PRESENTATIONS † = upcoming	<i>Non-vanishing for quartic Hecke L-functions and ranks of elliptic curves</i> [†] AMS Sectional: Recent Developments in Number Theory Kennesaw State University GA <i>Non-vanishing for quartic Hecke L-functions and ranks of elliptic curves</i> The 2026 Gainesville International Number Theory Conference Gainesville, FL <i>Surfaces associated to zeros of automorphic L-functions</i> JMM: Research Presentations by Math Alliance Doctorates	October 2026 March 2026 January 2026

	JMM: Recent Trends in Analytic Number Theory Washington D.C.	
	<i>Surfaces associated to zeros of automorphic L-functions</i> Georgia Tech Number Theory Seminar	September 2025
	<i>Arithmetic properties of m-colored Frobenius partitions</i> 37 th Automorphic Forms Workshop	April 2025 University of North Texas
	<i>Surfaces associated to zeros of automorphic L-functions</i> UIUC Number Theory Seminar	October 2024
	<i>Surfaces associated to zeros of automorphic L-functions</i> AMS Sectional: Special Session on Additive Number Theory and Modular Forms University of Texas at San Antonio	September 2024
	<i>A surface associated to the zeros of the Riemann zeta function</i> Princeton/IAS Number Theory Seminar	February 2024 Joint with Alexandru Zaharescu
	Sign changes of the error term of the Piltz divisor problem CRG Weekly-Seminar	September 2023 University of British Columbia
	Sign changes of the error term of the Piltz divisor problem UIUC Number Theory Seminar	May 2023
POSTER PRESENTATIONS	<i>Surfaces associated to zeros of automorphic L-functions</i> Midwest Arithmetic Geometry and Number Theory Conference	March 2025 Ohio State University
	<i>Sign changes of the error term of the Piltz divisor problem</i> Midwest Arithmetic Geometry and Number Theory Conference	October 2023
	<i>Sign changes of the error term of the Piltz divisor problem</i> Inclusive Paths in Explicit Number Theory Summer School	July 2023
	<i>Daphnia population dynamics with varying genotypes, two food sources, and parasites</i> University of Illinois Housing: Researcher's Initiative	May 2018
OUTREACH	Modular Forms: The Fifth Fundamental Operation Lake Forest College Math Seminar	October 2023
	Explicit Formulas Related to the Riemann ζ function Rose-Hulman Institute of Technology Math Seminar	October 2023 Interactive Website
	Teaching assistant at Spartan Academy Marian Catholic High School Led STEM activities on robotics, coding, and engineering for K-8 students.	Summer 2018 Chicago Heights, IL
TEACHING EXPERIENCE	University of Illinois at Urbana-Champaign Teaching Assistant: Calculus 3 (NetMath program)	Summer 2025
	Teaching Assistant: Calculus 3 <i>Ranked "Excellent" by students: Spring 2025</i>	Fall 2024-Spring 2025

	Teaching Assistant: Calculus 1 <i>Ranked "Excellent" by students both semesters.</i>	Fall 2021-Spring 2022
	Course Assistant: CS 101 (Introductory Course on Python)	2018-2020
CONFERENCES AND WORKSHOPS ATTENDED	37th Automorphic Forms Workshop University of North Texas	April 2025
	Midwest Arithmetic Geometry and Number Theory Conference Ohio State University	March 2025
	AMS Sectional: Special Session on Additive Number Theory and Modular Forms University of Texas at San Antonio	September 2024
	Comparative Prime Number Theory Symposium (PIMS) University of British Columbia, Vancouver	June 2024
	Clifford Lectures: The Web of Modularity Tulane University	February 2024
	Midwest Arithmetic Geometry and Number Theory Conference University of Michigan	October 2023
	Institute on Teaching and Mentoring Southern Regional Education Board	October 2023
	Inclusive Paths in Explicit Number Theory Summer School BIRS at UBC-Okanagan, Kelowna, BC, Canada	July 2023
	Midwest Arithmetic Geometry and Number Theory Conference University of Illinois at Chicago	October 2022
	BB 5th EU/US Summer School and Workshop on Automorphic Forms and Related Topics University of Sarajevo	August 2022
	Thematic Program in p-adic L-functions and Eigenvarieties University of Notre Dame	July 2022
	NSF/CBMS Research Conference Ramanujan's Ranks, Mock Theta Functions and Beyond University of Texas Rio Grande Valley	May 2022
	Field of Dreams Conference Math Alliance, Purdue University St. Louis, Missouri	November 2019
	Career Paths in the Mathematical Sciences: An IMA/Math Alliance Workshop IM&A, University of Minnesota	June 2019

SERVICE

Committee Member Climate, Equity and Inclusion Committee	Fall 2025-Spring 2026 UIUC
Graduate Student Mentor Illinois Mathematics Lab Project title: Automated Proofs of Partition Congruences Students: Hao Cai, Tyler Cushing, Jennifer Rotter, Eeshan Zele	Fall 2023 UIUC
Committee Member Committee to prepare surveys on Math Alliance Scholars	Fall 2022 Math Alliance
Co-organizer UIUC Graduate Number Theory Seminar	Fall 2022-Spring 2026
Peer Mentor Peer Mentoring in a Virtual University Setting Program University of Illinois at Urbana-Champaign	Fall 2021-Spring 2023